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TECHNICAL NOTES

ROCKY MOUNTAIN STATION

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STN PUB ALASKA FOREST RESEARCH CENTER

U S DEPARTMENT OF AGRICULTURE, FOREST SERVICE

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Physical Soil Characteristics Related to Site Quality in Climax Stands of Southeast Alaska

The three factors; depth of organic layer, depth of mineral soil, and depth of tree rooting, are fairly trustworthy indicators of site quality in undisturbed climax stands in areas of uniform parent rock materials. They may be useful as a guide for the prediction of site index of second-growth that will follow cutting of the climax for pulptimber.

The following table, compiled from preliminary data, shows these characteristics:

<u>Depth of organic layer in inches</u>						<u>Depth of mineral soil^{2/} in inches</u>					
<u>Site class</u>	<u>G^{1/}</u>	<u>M</u>	<u>I</u>	<u>P</u>	<u>Wtd. Av.</u>	<u>Site class</u>	<u>G</u>	<u>M</u>	<u>I</u>	<u>P</u>	<u>Wtd. Av.</u>
1	3½	9	10	11	6	1	20	15	10	0	16½
2	7	7	9½	8	8	2	8	15	6	2	9½
3	6½	8	8	11	8	3	5½	9½	6½	1	6½
4		5½	13	21½	13	4		8½	12½	3½	8
5			13	22½	19½	5			5½	2½	3½
Av.	4½	7½	10½	17		Av.	15½	13	10	2½	

^{1/} Drainage classes: Good, Moderate, Imperfect, and Poor.

^{2/} Depth to unconsolidated parent material or bedrock.

The depth of the mineral and unincorporated organic horizons is related to drainage condition. Soils with good drainage tend to have the thinnest organic layers and the better developed mineral horizons. Soils with poor drainage have very thick organic horizons and little mineral soil development.

A relationship between tree root penetration in mineral soil and drainage was observed. Root penetration in the mineral fraction averaged 6½ inches with good drainage and 3 inches with moderate drainage. Where drainage was imperfect or poor, rooting was limited almost entirely to the organic horizons. On the average root penetration stopped 2 inches above the mineral soil on imperfectly drained sites and 10 inches above on poorly drained sites.

The better drained soils had a higher percentage of podzol profiles and the greatest degree of soil development. Half-bog soils, predominant on poorly drained areas, had no podzol layer.

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